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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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Mr. John L. Rodi, Regional Director
Bureau of Ocean Energy Management
Gulf of Mexico OCS Region
1201 Elmwood Park Blvd
New Orleans, Louisiana 70123-2394

Mr. Lars Herbst, Regional Director
Bureau of Safety and Environmental Enforcement
Gulf of Mexico OCS Region
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New Orleans, Louisiana 70123

Mr. Gregg M. Worley, Chief
Air Permits Division
United States Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303-8960

Ref.: Biological Assessment for Oil and Gas Activities in the Gulf of Mexico (GM 673E)

Dear Messrs. Rodi, Herbst, and Worley:

This responds to the Bureau of Ocean Energy Management's (BOEM) February 7, 2013, letter and final biological assessment (BA) for federally-permitted oil and gas activities on the Outer Continental Shelf (OCS) and associated activities in the Gulf of Mexico. BOEM has determined that oil and gas leasing activities may adversely affect listed species and has requested formal consultation with the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act (ESA). Your letter indicates that BOEM is the lead agency representing both BOEM and the Bureau of Safety and Environmental Enforcement (BSEE). On June 30, 2010, BOEM originally requested reinitiation of formal consultation on the 2007-2012 lease sale plan (June 29, 2007 biological opinion) following the Deepwater Horizon oil spill (DWH). In a September 24, 2010, letter, we outlined additional information that would be required to complete consultation, including a revised oil spill assessment. In a subsequent meeting between BOEM, BSEE, and NMFS on December 7-8, 2010, we recommended the scope of the consultation include leasing activities for the entire Gulf of Mexico leasing program on the OCS. In a January 24, 2011, letter to the U.S. Environmental Protection Agency (EPA), we indicated that NMFS will include the EPA as an action agency in future opinions for related permits regarding oil and gas activities on the OCS. BOEM transmitted a draft BA for NMFS comment on April 24, 2012. We provided comments on the draft BA to BOEM on May 31, 2012. BOEM transmitted a final BA to NMFS on February 7, 2013.

Scope of the Formal Consultation
As a result of ongoing coordination between our agencies, the final BA submitted in support of formal Section 7 consultation has been expanded in scope to include all future oil and gas actions in the Gulf of Mexico. This consultation now includes all existing leases and future leases awarded until the year 2022. BOEM considers a lease life to be up to 40 years and the consultation will assess this time frame for lease activities associated with this lease period. This BA also includes actions permitted by the EPA as a co-action agency, for associated permitting of oil and gas activities in federal waters of the Gulf of Mexico. Since this programmatic consultation will cover the entirety of the federal oil and gas program in the Gulf of Mexico, this biological opinion will supersede all previous consultations on these activities and will also complete the reinitiated consultation on the June 29, 2007, biological opinion.

During preparation of the biological opinion, we will identify any effects of the action associated with implementation of each of the Outer Continental Shelf Lands Act (OCSLA) stages through the approval of various permits and plans. We anticipate the *Effects of the Action* section of the biological opinion will deconstruct the OCSLA stages into major routes of effects categories across all stages of oil and gas leasing in the Gulf of Mexico. Our preliminary review has identified the following routes of effects categories that will be covered during formal consultation and in the biological opinion.

- Geological and Geophysical Surveys (on and off lease actions)
- Decommissioning (explosives and site clearance trawling)
- Other Noise Sources (pile driving, drilling, and background noise)
- Accidental Spills
- Permitted Discharges and Contaminants (air and water)
- Vessel Operations
- Air Operations
- Marine Debris and Entanglement
- Environmental Safety and Enforcement Measures

Information Needs, Timeline, and Initiation of Consultation
Typically formal consultation lasts 90 days followed by a 45-day period to prepare the biological opinion. After reviewing the BA, we have determined there is enough information to initiate consultation on this action; however, we have identified additional issues and information needs, both of which should be addressed in the near term in order to facilitate timely completion of consultation. Due to the geographic and temporal scope of this action and the complexity of its effects, we expect consultation to exceed the time frame for formal consultation under the ESA and request you provide your agreement to extend the consultation period.

Enclosed with this letter is an internal planning timeline for consultation milestones and completion of the biological opinion. Please review this time line and provide your agreement or provide further comments for discussion. We expect the timeline will need to be periodically updated with milestone dates as consultation proceeds toward completion. NMFS's overarching issues and information needs to complete our effects analyses are discussed in more detail below.

USEPA Information

The final BA includes actions permitted by the EPA as a co-action agency, including effluent discharges from oil and gas activities in federal waters of the Gulf of Mexico and air emissions east of 87.5° W longitude. In addition to consultation on the effects of issuing air quality permits, we will require additional information on National Pollution Discharge Elimination System permits from EPA for water discharges that cover the same time frame as this consultation (lease sales up to the year 2022 and resulting lease actions over 40 years). To determine the effects of effluents from oil and gas activities NMFS will require the following information: (1) a full description of the types of discharges to be authorized and how these discharges may interact with the environment and protected species; (2) the estimated volumes of each type of discharge; (3) a description of the types of chemical compounds associated with each type of discharge, their fate and effects in the environment, and whether the mixing of chemical compounds may result in additive or synergistic effects in the water column; (4) a description of any restrictions for each type of discharge; (5) an explanation of any pre-authorization toxicity testing requirements; and (6) a description of all required monitoring and compliance measures associated with each type of discharge.

Catastrophic Spill Risk Analysis

Catastrophic accidents are usually preceded by events that although observable, are typically not recognized as causal factors until after an investigation is conducted. Oil spills are often the result of a sequence of events that lead to accidental spills. Unless a probability analysis takes into consideration the causal factors of accidental oil spills, historical data alone may not be sufficient to predict the occurrence of spills in the future. Although catastrophic spills have a lower probability of occurring than smaller-volume spills, the effects of catastrophic spills are likely to pose a greater impact to listed species. While catastrophic spills are considered rare events, they do occur from time to time. Furthermore, a combination of factors, such as deep water drilling itself, the technological and safety challenges associated with deep water drilling, high pressure oil deposits, and drilling in unknown geologic areas, contribute to the increased potential for catastrophic spills.

We believe that the risks to listed species from very large or catastrophic spills cannot be equally characterized mathematically with the risks associated with small spills. At the time our 2007 biological opinion was issued for the 2007-2012 lease sale plan, a major spill event (i.e., a catastrophic spill) was considered to occur, on average, once every 40 years. Although that was considered to be a low probability event, we still anticipated it could be a major impact-producing effect of the action that posed an unacceptable risk to listed species. BSEE (then Minerals Management Service) did not provide NMFS with any modeling for a major oil spill at the time of the 2007 opinion and we relied upon our own information and analysis to complete the oil spill risk assessment found in that biological opinion. At that time we considered factors such as improvements in offshore technology and safety measures since the last major spill in the Gulf of Mexico. Considering the federal oversight, safety, and response measures in place, our assessment indicated a major spill, one-half the size of the Ixtoc I spill that occurred in 1979, was likely. Although we correctly characterized the risk and likelihood of a major spill occurring, the Macondo blowout demonstrated that the best available information did not allow us to predict that an event on the order of magnitude of DWH could have occurred. Also, the best available information, on which our analyses were based, did not suggest any potential problems with

control measures such as blowout preventers, the difficulty in regaining control of a well when emergency technological measures fail, and the challenges associated with responding to spills in deep, offshore areas of the Gulf of Mexico. It may be premature to adequately consider all risks while the investigation into the causes of DWH is still ongoing. Therefore, it would be helpful if BOEM can provide information on the risks associated with catastrophic spills occurring, which presumed risks associated with future catastrophic spill occurring were considered in the analysis, and how those risks were incorporated into the statistical analysis contained in the BA.

Since the DWH oil spill, BOEM and BSEE have made regulatory changes intended to improve offshore safety. Mathematically, BOEM has provided a statistical probability that suggests the frequency of another catastrophic spill is low. Based on the probability, BOEM determined in the BA that "in the case of low probability, catastrophic spills, such as the 2010 DWH blowout and oil spill in the Gulf of Mexico, BOEM does not consider this category of spill to be an effect of the action, as defined under the ESA implementing regulations at 50 CFR §402.02, given (1) it is not an anticipated result of the proposed action, and (2) it is not reasonably certain to occur." Considering that such a spill occurred in 2010, we are unsure how the risks that result in catastrophic spills and recent regulatory changes were considered in your determination that catastrophic spills are not an effect on the action. We remain concerned that not including a catastrophic spill as an effect of the action based on a probability that it is "not reasonably certain to occur" may not allow us to assess high-impact events occurring in the future, even if the probability of another catastrophic spill may be very low, the magnitude of impacts may be quite high. Further consideration of the risk factors that may lead to the accidents resulting in these large spill events need to be properly assessed.

In summary, the DWH catastrophe occurred not due to a single risk factor, but the culmination of several factors. In part, a risk analysis should consider not just probabilities based on historical data, but also an assessment of all the risk factors associated with catastrophic blowouts occurring, the changes made in the oil and gas industry since our 2007 biological opinion, the effectiveness of those measures to prevent such a spill occurring again, and the adaptive nature of those measures to meet new drilling and production technologies of the future. Such an assessment will inform whether such risks remain and pose a future threat to listed species and Gulf of Mexico ecosystems. A method used to assess risk by the Nuclear Regulatory Commission[1] in the nuclear industry and by NASA[2] to determine whether low probability, high impact events are unacceptable, tolerable, or acceptable, has been suggested as a more appropriate tool to consider the sequence of risk factors that result in accidents, not just historical probabilities.[3]

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[1] http://www.nrc.gov/about-nrc/regulatory/risk-informed.html

[2] NASA. 2011. NASA Accident Precursor Analysis Handbook. Version 1.0. NASA/SP-2011-3423. Office of Safety and Mission Assurance, 104 pgs.

[3] Cooke, R.M., H.L. Ross, and A. Stern. 2011. Precursor Analysis for Offshore Oil and Gas Drilling: From prescriptive to risk-informed regulation. Discussion paper submitted to the staff of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. RFF DP 10-61, 33 pages.

In our March 12, 2013, coordination call, you offered to hold a webinar to explain how the catastrophic spill analysis probability was calculated, and how it was used to determine that such a spill is unreasonably certain to occur in the future. We would also like to discuss whether the alternative risk assessment method referenced above may be useful in assessing the probability of catastrophic spills in the Gulf of Mexico. We look forward to that webinar and future discussion on these important issues.

Comparison of Mathematical Probabilities to Industry Oil Spill Response Plans
In oil spill response plans, BSEE requires industry to prepare for worst case spill scenarios from their leasing actions. Therefore, industry models worst case discharge scenarios, including volume. You have provided the probability of large volume spills using historical data. However, to assess the likelihood of future large spills occurring we should evaluate the worst case discharge scenarios provided by industry. Industry estimates should include worst case discharge scenarios in each planning area, as well as for both continental shelf and deepwater production in each planning area. We also seek clarity on the probabilities for the size and duration of a major spill that is likely to occur from BSEE's historical data. Please confirm that the upper limit of your largest probable spill category considers daily spill sizes ranging from a lower limit of $\geq$ 1,000 bbl to an upper limit of 100,000 bbl, which is the lower limit of the next category for a catastrophic spill.

Shuttle Tankers
NMFS agrees with BOEM's assessment that the primary source of accidental oil spills is most commonly associated with oil transport (tankers and pipelines), followed by offshore drilling and production activities. However, spill probabilities from the transport of oil to shore by vessels have not been provided and are only discussed for pipelines. Please provide additional information on the volume of oil produced and the number of vessel transports of oil from deepwater production facilities that is not transported to shore via pipeline.

References
The link to the article on p. 126 of the BA, supporting that the lower end of risk for a catastrophic spill occurring is 70 years, does not provide full access to the paper as referenced in the BA. Please provide the paper for which you are citing this information so it can be reviewed. We have previously requested copies of all literature referenced in the BA. Providing copies of the referenced materials will help expedite our review and synthesis of the information in the BA, and reduce the amount of requests for additional information and clarifications during consultation.

Entanglement
A sea turtle was recently entangled in a line associated with an ocean bottom node survey on the continental shelf. We appreciate the attention you have given to this issue and look forward to our continued cooperation in investigating the cause, implementing potential mitigation, and improvement of reporting procedures. For this Gulf-wide consultation, please provide any additional relevant information regarding offshore cables and lines that may be associated with entanglement risks to protected species.

Acute Noise Exposure and Background Noise Sources

There has been a great deal of attention given to the effects of acute noise sources related to oil and gas, such as geological and geophysical (G&G) surveying activities with sonars and airguns, and decommissioning of offshore structure using explosives. BSEE is currently preparing a supplemental environmental assessment for decommissioning activities and a final environmental impact statement for the applications associated with Marine Mammal Protection Act regulations for G&G activities in the Gulf of Mexico. Any new information that can be provided from the preparation of these documents that is not currently in the BA will need to be incorporated into the ESA consultation and effects analyses as it becomes available. Other acute sources, such as pile driving, also need equally adequate attention due to the potentially large number of structure installations in the Gulf of Mexico. In addition to acute noise, we will also consider sources of noise contributing to increases in background noise levels in the Gulf of Mexico. We will consider the potentially chronic effects of increases in background noise levels on habitat features and quality in the Gulf of Mexico. The BA does not provide sufficient information on current ambient noise levels and noise sources from oil and gas activities in order to conduct a cumulative impact analysis. Our review indicates larges deficiencies in the information provided for current ambient noise levels such as drilling noise, oil and gas vessel noise, pinger noise, platform noise, pipeline laying noise, and pile driving/construction noise.

- Please provide information on baseline noise levels over the continental shelf and deep water areas in the Gulf of Mexico.
- Please provide any recent noise measurements for drilling in the Gulf of Mexico. The reference provided (mostly from Richardson et al. 1995) may not accurately describe the new technologies and noise produced from drilling activities in the Gulf of Mexico.
- Much of the pile driving information provided in the BA and in the Nationwide EIS is largely insufficient. The BA should provide any details on regional-specific construction levels and noise production for the Gulf of Mexico. Although pile driving may be a major noise-producing activity, noise modeling has not been provided in the BA and insufficient details regarding the type of materials and construction methods have been provided to NMFS to estimate any potential impacts. We have previously requested this information, yet we have still not received information to adequately consider the potential impacts associated with these activities. Although we may be able to use peer-reviewed literature to estimate noise levels from pile driving, we still require the numbers of installations each year, the types of materials and equipment used to install the structures (anchors, pile types, work boats, and hammer types), any seasonal components or preferred times of year for offshore construction in the Gulf of Mexico, and the duration of the construction periods for structure installations.

- Please provide any other relevant information on any new sources of noise from oil and gas technologies used in the Gulf of Mexico.

Tier 2 Consultation Requirements under Programmatic Biological Opinions
The NMFS and the Fish Wildlife Service have developed a range of techniques to streamline the procedures and time involved in consultations for broad agency programs or numerous similar activities with predictable effects on listed species and critical habitat. Some of the more common techniques and the requirements for ensuring that streamlined consultation procedures comply with Section 7 of the ESA and its implementing regulations are discussed in the October 2002 joint Services memorandum, *Alternative Approaches for Streamlining Section 7 Consultation on Hazardous Fuels Treatment Projects* (Memorandum available at http://www.fws.gov/endangered/esa-library/; also see, 68 Federal Register 1628- January 13, 2003 (http://www.nmfs.noaa.gov/pr/laws/esa/policies.htm)). The guidance encourages early coordination and cooperation at the project planning stage, or in this case the lease sale planning stage over the next 10 years, ''batching'' of similar projects, and use of design criteria or screens to streamline the consultation process while minimizing the potential for adverse effects to listed species and their habitats at both wide geographic ranges and project specific area effects.

Coordination during programmatic consultations is most effective when it is used to develop project design criteria that ensure that future actions are consistent with the long-term conservation needs of the listed resources that will be affected. Projects that fit within the design criteria quickly move through the subsequent project-specific, or "Tier 2", consultation process. The guidance stresses the importance of staff from the consulting agencies developing good working relationships and a comprehensive understanding of the needs, constraints, and requirements of their counterparts in developing the Tier 2 consultation process. Our *Platform Removal Observer Program* is an excellent example of how project design criteria can be used to streamline subsequent reviews of decommissioning permits. NMFS and BOEM have also developed and are applying interim ESA coordination procedures that will be followed until the new biological opinion is completed. These procedures, finalized on February 8, 2012, are a useful model upon which the Tier 2 consultation process may be conducted as we develop appropriate project design criteria under this programmatic consultation.

Loggerhead Critical Habitat and Candidate Species
NMFS is in the process of developing a proposed rule to designate critical habitat for loggerhead sea turtles. The proposed rule may publish this summer. Considering the large geographic area of oil and gas activities in the Gulf of Mexico and the scope of this formal consultation, we anticipate including a conference opinion on loggerhead sea turtle critical habitat once the proposed rule is published in the *Federal Register*. Pending the result of decisions, there are a number of current listing petitions that may result in additional candidate species. The most recent list and information for listing petitions can be found on NMFS's Southeast Region website at http://sero.nmfs.noaa.gov/pr/ListingPetitions.htm. The timing of additional listing or critical habitat actions may affect the timeline for completion of the consultation.

We intend to schedule regular coordination calls with BOEM, BSEE, and EPA staff to discuss our comments provided in this letter and to further coordinate as we progress with ESA consultation. We look forward to our continued cooperation and coordination under Section 7 of the ESA. For additional information please contact Cathy Tortorici, Chief, Interagency Cooperation Branch, by e-mail at Cathy.Tortorici@noaa.gov or by phone at (727) 209-5953.

Sincerely,

David Bernhart
Assistant Regional Administrator

cc: F/PR5 – Kellie Foster-Taylor
OGC – Mark Hodor
OGC SE – Monica Smit-Brunello
USEPA Region 4 – Karrie-Jo Robinson-Shell

Enc.: Consultation Timeline

File: 1514-22.J
Ref.: SER-2013-10557

Proposed Timeline for the Programmatic Biological Opinion with BOEM, BSEE, and EPA on Oil and Gas Activities in the Gulf of Mexico

March 29, 2013

Notes about the Timeline Table –

- This table assumes that no major emergencies come up. The ability to meet this timeline depends on how quickly BOEM/BSEE/EPA can provide NMFS with additional information.
- Monthly check-ins with BOEM/BSEE/EPA are included in the table.
- Orange – BOEM/BSEE/EPA actions
- Blue – Check-ins and Actions with BOEM/BSEE/EPA
- Gray-Green – NMFS PR Actions
- Pink – NMFS GC Actions

Proposed Timeline for GOM-wide Programmatic BiOp **NMFS' Development of Draft BiOp**		
Action	**Date and/or Time to Complete**	**Comment**
DOI sends BA to NMFS	February 7, 2013	
Check-in with BOEM/BSEE/EPA on BA	February 15, 2013	PR's initial reaction to BA based on quick read
NMFS reviews BA to determine Completeness	By March 5, 2013	PR reads BA to determine if additional information is needed.
Check-in with BOEM/BSEE/EPA on BA	March 12, 2013	PR provides reaction to BA.
Letter Back to BOEM/BSEE/EPA	By March 30, 2013	Letter back to BOEM/BSEE/EPA requesting additional information, outline, and timeline for review and comment. NMFS starts formal consultation with the proviso that information requested in RAI letter will be provided.
Meeting with BOEM/BSEE/EPA on spill analysis.	By March 30, 2013	BOEM/BSEE/EPA organize meeting.
Check-in with BOEM/BSEE/EPA on BA	By April 15, 2013	Progress check on RAI response, review of outline, timeline, portions of BiOp noted above and BiOp writing.
PR shares draft proposed action, status of the species, and consultation history with GC	By May 1, 2013	GC reviews BiOp sections.

GC review completed on BiOp sections	By May 15, 2013	Comments given back to SERO PR
PR sends draft proposed action, status of the species, and consultation history to BOEM/BSEE/EPA for review.	By May 30, 2013	
Agreement with GC in SERO and Headquarters on Tier 2 review based on BA	May 15, 2013	Internal conversation with NMFS on Tier 2.
Check-in with BOEM/BSEE/EPA on BiOp	By May 15, 2013	Agreement on BiOp outline;
NMFS shares draft Tier 2 for discussion	By May 15, 2013	BOEM/BSEE/EPA begin review of Tier 2.
Check-in with BOEM/BSEE/EPA on BiOp	By June 15, 2013	BOEM/BSEE/EPA provides response to draft Tier 2, RAI provided, proposed action, status of the species, and consultation history.
Check-in with BOEM/BSEE/EPA on BiOp	By July 15, 2013	How NMFS is progressing on BiOp development?
Check-in with BOEM/BSEE/EPA on BiOp	By August 15, 2013	How NMFS is progressing on BiOp development?
Check-in with BOEM/BSEE/EPA on BiOp	By September 15, 2013	How NMFS is progressing on BiOp development?
Check-in with BOEM/BSEE/EPA on BiOp	By October 15, 2013	How NMFS is progressing on BiOp development?
PR provides GC with sections of the BiOp for review	By October 31, 2013	GC starts looking at sections of BiOp and provides feedback to PR.
Check-in with BOEM/BSEE/EPA on BiOp	By November 15, 2013	How NMFS is progressing on BiOp development?
GC initial review of BiOp	By December 15, 2013	GC provides feedback on BiOp sections.
Check-in with BOEM/BSEE/EPA on BiOp	By December 15, 2013	How NMFS is progressing on BiOp development?
Complete draft of BiOp prepared by SERO PR at staff level and submitted into PR review	By December 31, 2013	This includes both SERO and HQ working together to develop BiOp
Check-in with BOEM/BSEE/EPA on BiOp	By January 15, 2014	How NMFS is progressing on BiOp development?
SERO PR Completes QA/QC review of BiOp	By February 3, 2014	Branch Chief, QA/QC reviewer, and ARA review complete
BiOp Sent to GC for review	By February 4, 2014	PR sends GC Completed Draft BiOp for review.
Check-in with BOEM/BSEE/EPA on BiOp	By February 15, 2014	How NMFS is progressing on BiOp development?
Check-in with BOEM/BSEE/EPA	By March 15, 2014	How NMFS is progressing on

on BiOp		BiOp development?
Check-in with BOEM/BSEE/EPA on BiOp	By April 15, 2014	How NMFS is progressing on BiOp development?
GC final review and clearance BiOp	By April 30, 2014	GC at SERO and HQ complete review of BiOp. This time period includes coordination with SERO PR and HQ PR to address GC comments on BiOp.
PR completes draft final BiOp	By May 1, 2014	BiOp reviewed by Directorate's' office and OPR management
PR completes draft final BiOp	By May 15, 2014	Any questions from Directorate's office resolved.
Check-in with BOEM/BSEE/EPA on BiOp	By May 15, 2014	How NMFS is progressing on BiOp development?
PR sends BOEM/BSEE/EPA draft final BiOp	By May 16, 2014	Cover letter and draft final BiOp transmitted
BOEM/BSEE/EPA Review of Draft BiOp		
BOEM/BSEE/EPA begin review of draft final BiOp	By May 19, 2014	Draft final BiOp review begins
Check-in with BOEM/BSEE/EPA on BiOp	By June 15, 2014	How BOEM/BSEE/EPA is progressing on BiOp review?
Check-in with BOEM/BSEE/EPA on BiOp	By July 15, 2014	How BOEM/BSEE/EPA is progressing on BiOp review?
BOEM/BSEE/EPA provide comments back to SERO PR and HQ PR on draft final BiOp.	By August 15, 2014	BOEM/BSEE/EPA review changes with SERO PR and HQ PR
Check-in with BOEM/BSEE/EPA on BiOp	By September 15, 2014	How is NMFS progressing on BiOp completion?
PR finalizes BiOp	By October 17, 2014	PR completes BiOp and sends it to BOEM/BSEE/EPA – This date includes all final coordination with GC, SERO PR and HQ PR.